Electricity on the Farm

A MONTHLY MAGAZINE FOR THE UP-TO-DATE RURAL FAMILY

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Thanksgiving Pies

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"Thanks to Electricity—

"We enjoy the luxuries of the city along with the independence of the farm"

Say Mr. and Mrs. Arthur Moulton, Pacific Highway, Vancouver, Washington.

"Though we live seven miles from the nearest town, we have as convenient a home as any of our friends in the city. An electric range, refrigerator, water pump, electric water heater, radio, washing machine, iron, and sewing machine, to mention only a few of our many electrical servants, have reduced the work and expense of keeping house on our large dairy farm tremendously.

"With all these safeguards to our family's health and safety—with the extra time we now have to spend with our children—we feel that right here on the farm is the finest place in the world for our little ones to grow up. Thanks again to electricity!

"When buying our first electric equipment nine years ago, we were advised by our friends to choose the best. This we did, and we certainly found that it paid. The cost of electricity has been less than we used to pay for other less satisfactory ways of cooking, refrigerating, lighting, etc., and the upkeep cost on our appliances has been next to nothing."

Above: The Moult have been using elec ity on their farm for years

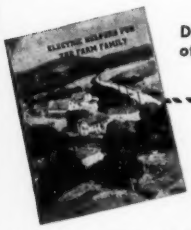
•

The whole family is thusiastic about the tric water pump

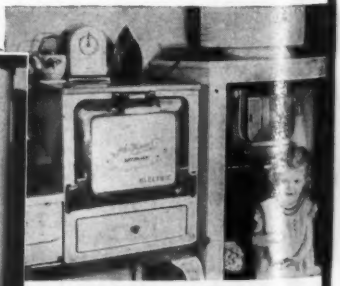
•

MR. Moult whose M dale Dairy th oughbred Guems have been consistent state and international p winners for the past seven years, gives a great dea the credit for the progress of his dairy to his elec equipment and to the assistance of the Northwest Electric Company rural engineers.

You, too, can profit from the use of General Elec equipment on your farm. Regardless of what typ farm you live on, you will want to know about 107 uses for electricity on the farm shown in Gene Electric's new farm book. May we send you free copy?



Dick is mighty proud of the family water heater



Baby Sue likes Middale Dairy milk k cool in the G-E refrigerator

General Electric Co., Dept. 6M-201, Schenectady, N. Y.

I'd like a copy of "Electric Helpers for the Farm Family."

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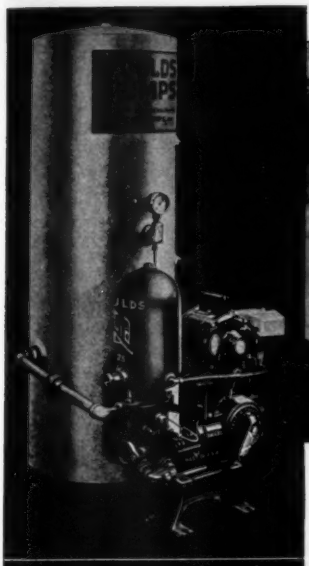
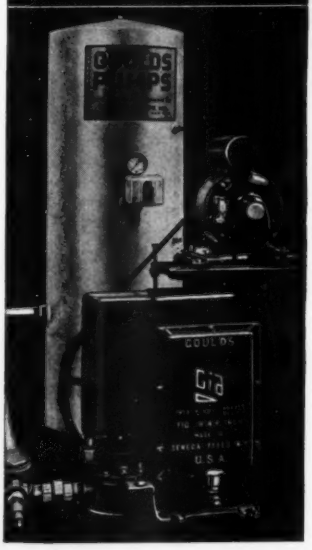
GENERAL ELECTRI





RUNNING WATER IS NO LUXURY!

The work-saving convenience of running water on your farm is no luxury—it is a sound investment in health. At best, sickness costs money, and your doctor will tell you how much running water can protect the precious health of your family. With a Goulds CID Automatic Water Supply System, you can have this health protection for as little as three cents per day!

What's more, an ample water supply gives fire protection, increases livestock and poultry yield, aids in spraying, and can be used for dry season irrigation.

Farm and rural home owners everywhere are finding these compact Goulds units economical, trouble-free, and silent. The coupon will bring you the name and address of your nearest Goulds dealer. He will be glad to give you all facts and figures on the Goulds CID System best suited to your requirements.

RUNNING WATER

MAIL THIS

GOULDS

GOULDS PUMPS, Inc., 340 Fall Street, Seneca Falls, N. Y.
Please send me the name of the nearest Goulds Distributor. I am interested in a pump for deep well ☐, shallow well service. ☐

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Editor's Chat

BOX CARS

Box cars! Miles of them. On the siding at Plumville; on the siding at Wistburg. Flat cars; furniture cars; refrigerator cars. Each car like an unrented house with taxes, depreciation, insurance, upkeep, and not even a garden plot. Would you want to own the railroads?

Trucks, union troubles, automobile competition, regulation, N.L.R.B., taxes; and railroads cannot stay at home and "wear overalls" or no one would ride.

—I'm proud I am a farmer—

SIMPLE COMPLICATED LIGHT

Dawn comes. It's light. We see.

Night approaches. It's dark. We see poorly.

Simple!

We strike fire—on the ground, in a lantern, in a gas lamp. Fire produces light. We see.

You press a button. Electricity heats a fine wire in a glass globe to white heat. It glows. There's light. That is reasonably simple.

Light is made up of waves, so scientists tell us. Drop a succession of pebbles in a pond. Waves roll out in circles from the point of impact. Wave lengths are measured from the crest of one to the crest of the next. Light is like that; only when the light source hits the ether which fills all space, the waves roll out, up, diagonally, spherically, in all directions.

Waves of light vary from about 16 to 30 millionths of an inch in length. The short ones we see as violet. The long ones red. Mix all the colors together and you have white light.

Light bounces. Sunlight strikes a mirror. It bounces back.

Light strikes a black cloth. Whoa! It doesn't bounce. It stays in the cloth.

Well, I guess that is explainable. You can bounce a ball on ice but not on water.

But here comes a beam of white light. It hits a painted wall. Green light bounces off; all other waves are absorbed by the paint. We call that green paint. It robs us of some light. A white beam hits an apple. Red bounces off.

Hold a green bottle or green cellophane in white light. Green rays come through. Others stay in the dye. Clear glass lets all the light waves through; white light. White or opal glass passes the white light but diffuses it.

Is that complicated? No, those are the simple truisms about light. Scientists have written books and books about light, and they are just commencing to find out about it. What do these facts have to do with you and your home? Well, answer me this:

If you want curtains which will admit the maximum of light, what color would you use?

Electric lamps produce nearly white light. What color reflectors or shades would you use to get the most light for your money?

Would the color of your walls make any difference in the lightness of your rooms? How about ceilings? Floor coverings? Some light mottled kitchen linoleums do not show dirt as much as dark, plain ones.

THANKFUL

Dictators, arrogance, pawns;
Air raids, gas masks, fear!
Agreements, renunciation, humiliation.
Preferring peace; provoked to the verge of pugnacity; acknowledging all of our many faults; I am an American.
—For which I am thankful.

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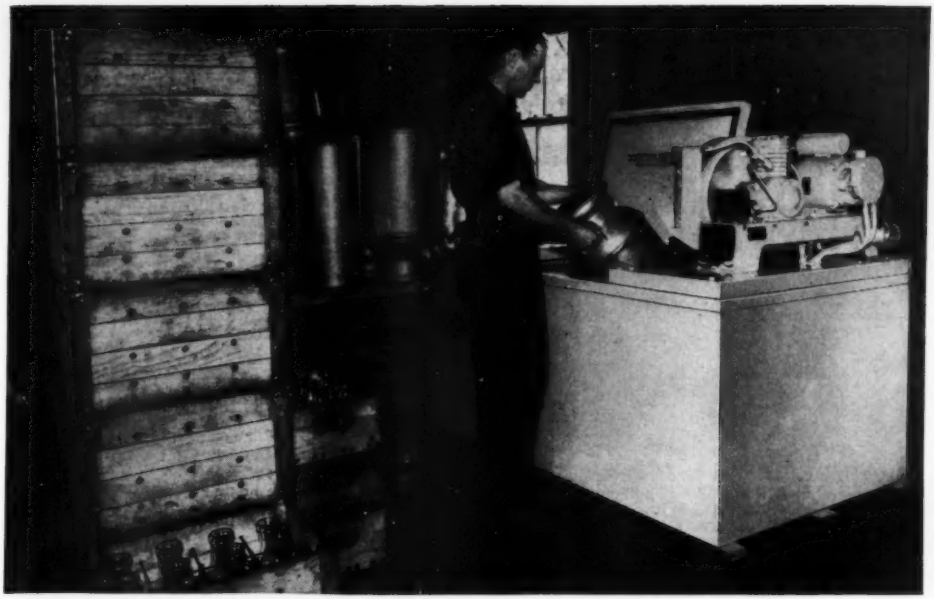

Richard A. Brackett puts a can of milk into his 10-can McCormick-Deering Cooler. He is president of the Wisconsin Dairymen's Association.

"Quickest, Easiest Way of Cooling Milk That I Know"

There's a basic rule among dairymen who market high quality milk: *cool it quickly to keep down bacteria count.*

Richard A. Brackett, prominent Wisconsin dairyman and owner of the 360-acre Elk Lake Farm, Elk Mound, Wis., writes us that a McCormick-Deering Milk Cooler is *"the quickest and cheapest way of cooling milk that I know."*

His letter follows:

"I recently bought a 10-can McCormick-Deering Milk Cooler. This cooler certainly does a nice job and is a great improvement over the method I formerly used.

"I am milking about fifty registered Jersey cows. All the milk is bottled and retailed. My experience has been that in order to market clean, fresh milk it is necessary to have clean utensils, a clean barn, clean cows, and last but not least, a cooling method that will cool the milk rapidly and efficiently to keep down bacteria count. *Your cooler is the answer to all the cooling problems I had.*

"One of the things I particularly like about your cooler is the method of cooling with pneumatic air agitation used in connection with an ice bank. *The McCormick-Deering method is the quickest and cheapest way of cooling milk that I know."*

* * *

Let the experience of Mr. Brackett and many other dairy leaders who use McCormick-Deering Dairy Equipment be your guide in choosing milk coolers, milkers, and cream separators. See the nearby McCormick-Deering dealer for full information. Or, write us for catalogs and literature.

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McCORMICK-DEERING
MILK COOLERS • MILKERS • CREAM SEPARATORS

MELT THE ICE OFF

Winter Income

Drinking Water Warmed to 50° is Responsible for an Extra Dozen Eggs per Hen—Profit Eggs. Cow Stomaches are Costly Water Heaters. Variety of Electric Heaters Available

By GEO. W. KABLE

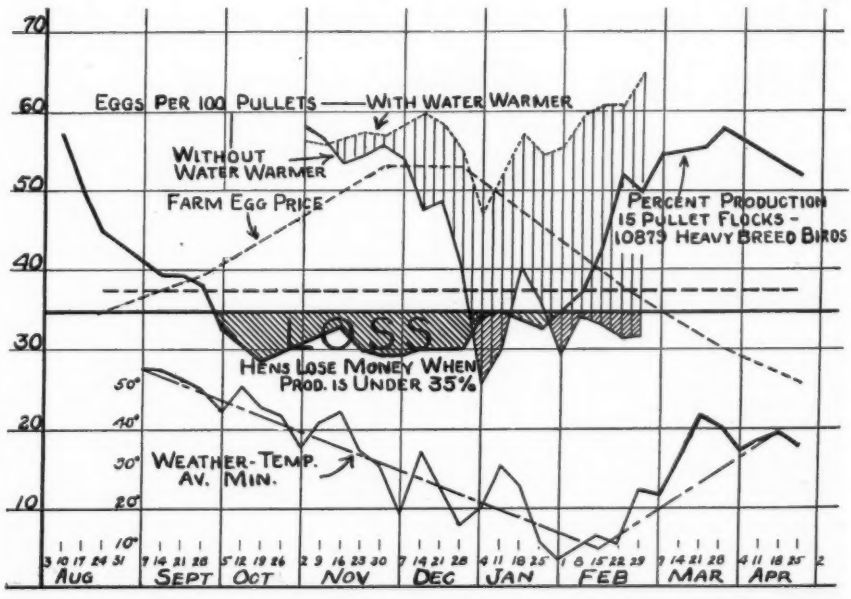
HANK GREENBERG is still knocking home runs and the World's Series is a week off as I peck out this article. But there is the "feel" of fall in the air and the papers are advertising winter coats. This article is to be for cows and hens. Of course cows and hens do not read,—but they are getting their winter coats. They grow them. (Lucky bulls and roosters!) But did you ever hear of a cow or a hen growing an ice-breaker?

Milk is 87 percent water and eggs 65 percent. If cows and hens do not drink water, you can hardly expect to harvest milk and eggs. It isn't done. It is not only the layer of ice on the surface that keeps animals from drinking, either. It's ice-water in the winter time. Do you like it?

Let's take hens first.

When I was doing experimental work out in Oregon eleven years ago, Prof. Fox and I found that pullets drank 25.4 percent more water in freezing weather if it was warmed. Those pullets when at 60 percent production were each drinking 0.26 pounds of water per day or 44 pounds of water per 100 eggs laid.

Being a little distrustful of Oregon's brand of chickens, the Western Washington Experiment Station with the cooperation of J. C. Scott of the Puget Sound Power & Light Co. sent a ques-



Graph Showing Last Winter's Egg Production. Two Flocks of 100 Hens Each

One flock represented by the solid line at the top, had water without warming; the other, represented by the dotted line above, had water warmed to 50°. Everything was identical except the water temperature. It was the same parent stock; hatched together; raised, housed and fed exactly the same. The heavy line marked "Percent Production 15 Pullet Flocks" gives an average for flocks housed under different conditions and without warmed water. It shows that many flocks are carried through the period of high egg prices at a loss. It is the few extra eggs in the winter time that make the profit.

tionnaire to their hens in the form of a water drinking experiment. The biddies answered that they'd prefer their drinks at 50 to 55°. If warmer, they drank less, and if colder, still less. That is about the temperature of well water and it is an easy temperature to maintain with electric heaters in cold weather without much expense.

Mr. Scott also reports that many poultrymen in Western Washington have found from experience that hens will lay one dozen more eggs during the winter if supplied with water at 50° day and night than if the water is allowed to drop to freezing or ice forms occasionally.

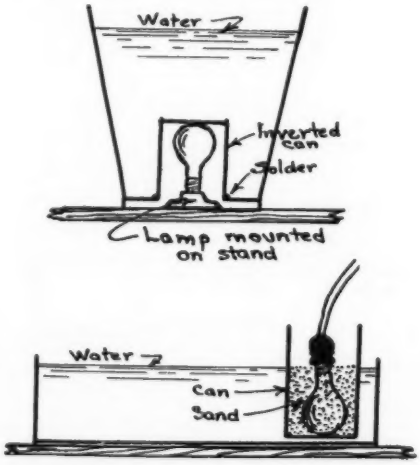
If you doubt the judgment of those Northwest hens, here are figures from the University of Illinois:

Water Condition	Hens in Flock	Winter Eggs per Hen	Increase
The usual supply; sometimes frozen	118	80.0	
Warmed part of time.....	122	87.8	9 %
Warmed all winter.....	121	95.6	19½%

Then Mr. Ultra-henman: You read graphs, don't you? Well you will find some interesting facts worth studying in the one accompanying this article. New England hens laid the facts. Howard Smith from Connecticut passed them from the hens to us. Pushed into figures it means that warmed water was responsible for 153 extra dozens of eggs from 118 hens during those months last winter when eggs were bringing 35 cents to 38 cents per dozen—a return of better than 45 cents per bird.

How to Heat Hen Water

So! What can be done about it?
Electricity is the most satisfactory and cheapest



Improvised Poultry Water Warmers

Upper: A water pail with a hole cut in the bottom and a can inverted over it and soldered to the bottom. The pail has no electrical connections but is placed over an electric lamp in a receptacle fastened to the water stand. It must be kept dry. Lower: An electric lamp on an extension cord with the glass part of the lamp covered with *dry* sand in a deep can. The can is then placed in the water pan. Watch out for "shorts" on this one.

method of heating. Only a small amount of heat is required.

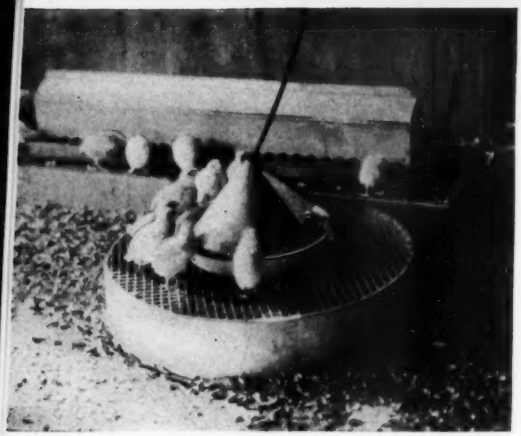
One of the newest, simplest and most economical heaters to use is a small immersion unit with a built-in thermostat for controlling the temperature and with attached water-proof rubber cord. It is of low wattage, may be connected to any outlet and just dropped in the pan, pail or fountain. It costs around $3. Heaters similar to these but made of pipe fittings, without the thermostat, and in a number of different wattages are available. Then there is the pan type heater about 8 inches in diameter and 1½ inches thick, made of galvanized iron, and containing a low wattage heating element. The water fountain or pail is placed on top of this heater.

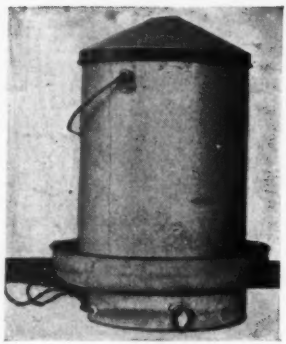
Bottoms up. This is an ambitious crew. If you get 'em up early in the morning with lights, there should be drinkable water as well as feed available while you are catching your last nap.

Soil heating cable has been used as heating elements. Sixty feet of cable on a 110 volt circuit will use 400 watts which is enough for five or six water pans. It must be remembered that shorter lengths of cable use more wattage, so the smaller the tank, the longer the cable necessary. The only practical way to use this cable is where there are very long troughs or a large number of troughs which can all be connected together electrically. The ends of the cable must be kept out of the water so moisture will not get inside the lead sheath. Soil heating cable may be wrapped around water pipes to keep them from freezing. (See January, 1938, ELECTRICITY ON THE FARM, p. 8.)

Several methods of using lamps as improvised heaters are shown in the sketches. When attempting to use any homemade device for water warming, one must be very careful to have no short circuits or electrical leakage as animals are quite susceptible to shock—more so than humans. If a thirsty hen puts her beak in the water and then decides not to drink, you had better look for leakage currents. Grounding the water pan to the water pipe or a pipe driven in moist ground with a wire connection is a wise precaution.

A small immersion heater placed in the end of a pan will heat the water in the pan quite uniformly throughout its length. Based on Oregon tests, I would say that a pan 3 feet long containing 3 inches of water could be warmed very satisfactorily with one heater. The wattage necessary varies from 40 watts upward. Prof. Hienton found





Left: There is a thermostatically controlled immersion heater in that little fountain. It holds uniform temperatures in small as well as larger containers. This is starting them right with zero temperatures outside.

Right: Fountain over a pan type heater. The heater is cousin to a little hotplate.

in Indiana that to prevent freezing of water in zero temperatures more than 30 watts are necessary for 14 quarts, and something over 75 watts are needed for 8 gallons.

Power consumption for water heating may be estimated at about 1 kw.-hr. per hen for a three month winter period in a cold climate. Thermostatically controlled heaters will use less and continuous heaters more.

Cows Need Warmed Water

Now cows.

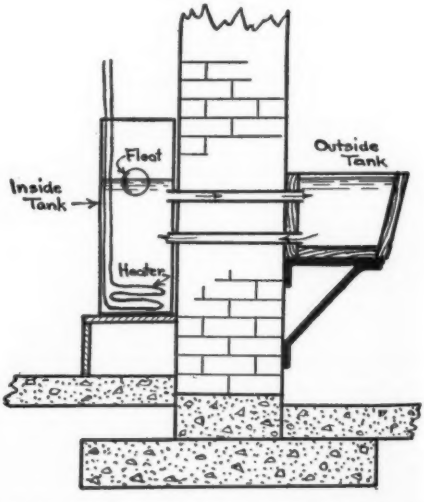
There are not many experimental data on the winter production of dairy cows with varying temperatures of water. Farm observations are all that are necessary to be assured that cows do not drink normal quantities of water when someone has to stand by and break the ice for them. Common sense also tells us that it must take extra feed to produce body heat enough to warm 10 to 15 gallons of ice water in a cow's stomach.

Two companies now make portable immersion heaters which may be used in stock tanks. One is a 1300 watt unit and the other 1000 watts. (See ELECTRICITY ON THE FARM for February, 1938, p. 30, and for April, 1938, p. 34. They may be used for warming water in any kind of a container where this wattage is suitable.

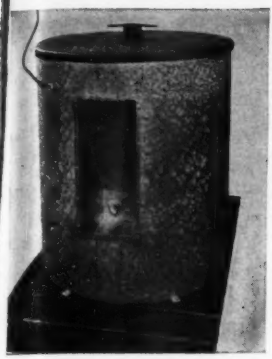
The University of Nebraska has experimented with two types of electric tank heaters. The first of these warming devices is illustrated in an accompanying sketch and consists of a 50 gallon, float controlled supply tank inside the barn connected to a 12½ gallon drinking tank outside the barn. The heating element is in the inside tank and the warm water circulates to the outside as indicated in the drawing. Baffles used in the inside tank are not shown. During a 64 day period from January 19, 1937 to March 28, 1938, 12,561 gallons of water were consumed by 18-22 cows. The electricity consumption was 0.05 kw.-hrs. per gallon or 0.491 kw.-hrs. per cow per day. The temperature of the water in the inside tank was held by thermostat between 70° and 76.5° throughout the period. The room temperature was 70°. The water in the outside tank varied from 70° to 32° depending on the severity of the weather, outside temperatures dropping down to 9° below zero. The outside tank was on a North wall.

The other type of heater which has been tried at Nebraska, according to F. D. Yung, research engineer, is made of a wood block float to the under side of which is attached two 60 foot lengths of soil heating cable. This 800 watt heater was floated near the surface and warmed only a small section of the large tank. The water temperature was maintained at approximately 45°. "The Dairy Husbandry Department liked the experimental unit well enough to buy it and have another made just like it." These floating heaters are used in tanks having the water level controlled by floats so the up and down movement was not great and little flexibility is needed in the electrical connections. The ends of the lead sheath had to be kept above water and protected from moisture by taping, of course.

Something new in a heater for the ordinary large stock tank has just been patented by Mr. G. E. Henderson of Knoxville, Tennessee. It consists of a box, open at top and bottom which partitions off about 40 gallons of water in the tank. The top of the box extends above the water line and a heating element is suspended near its bottom. The 400 watt heater, thermostatically controlled, is adequate to keep the water inside the



A Nebraska type of heater. The tank inside the barn holds 50 gallons; outside tank 12 gallons. The inside tank is supplied from a water system through a float control. It also contains the electric heater. Warm water flows to the outside tank through the pipes by convection.



Left: An electrically warmed sheep and hog waterer. It holds 60 gallons, has 3 inches of rock wool insulation and the average daily power consumption from January 9 to March 22 in Indiana was 1.6 kw-hrs.

box at a constant temperature above freezing. As livestock drinks from the enclosure, water enters from the bottom of the box and flows up past the heater. Ice freezes up against the outside of this box but the operation inside is not affected. A heat insulating float inside the box covers most of the water surface and helps prevent heat loss. The stock soon learn to push it down when they want to drink. Two of these heaters were used on Ohio farms in the winter of 1936-7. The one set to turn on at 46° used an average of 2.8 kw.-hrs. per day from January 17 to April 2 supplying 12 to 15 head of cattle and horses. The other set at 34° used 1.3 kw.-hrs. per day from December 7 to April 7.

Various types of "hairpin" and other immersion heating elements have been used with some success in stock tanks. One was described in last February's issue of ELECTRICITY ON THE FARM, p. 15.

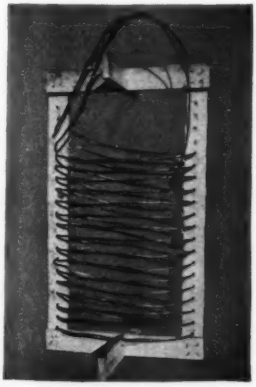
It is obviously quite impractical to warm an entire 6 or 8 foot tank of water with electric heat. Either the water must be supplied by a pressure system and the tank limited to small capacity, or some confining arrangement such as the floating heater or boxed-in immersion unit used in the large tanks. Tank insulation and covers will save

An ultra-watering system on the farm of Dan W. Richards of Glenvar, Virginia. Running water; drinking cups; and an electric heater to supply the cups. The thermostat on this heater is set so the water will reach the cows at the right temperature.

heat, but where electric heat is available there is usually also an automatic water system which makes large outside tanks less necessary than in the days when we depended on wind for water. The best solution of the dairy drinking water problem for profit is probably to use a small tank with a small heater and float control; then move the tank inside where the cows can drink in comfort.

MORE HOT DRINKS from the HOTBED WIRE

By HOBART BERESFORD



WHERE skimmed milk and buttermilk are fed to poultry and livestock during the winter months the problem of keeping the supply from freezing is sometimes a difficult one to solve. Mr. W. E. Dunbar, Rural Sales Supervisor of the Utah Power and Light Company has solved this problem by the use of a standard sixty foot length of hotbed wire mounted on a wooden frame which will just fit inside a standard barrel, commonly used for storing the buttermilk near the feed yard or poultry pen. The form is made of 1 x 3 inch boards forming two crosses for the top and bottom, connected with side arms in which holes are drilled on two inch centers through which the hotbed wire is threaded to form a circle slightly smaller than the inside diameter of the barrel. In the illustration the upright supporting strips for the cable at front and back have been omitted to show the cable. They should be used.

Although this heating element may be controlled conveniently by the use of a thermostat similarly used for the control of electric hotbeds, it has been found more economical to control it manually, simply by plugging in the connecting cable to the convenience outlet whenever low temperatures are anticipated.

The Best Investment We Ever Made—

A COAL STOKER

Electric Stokers Fire the Furnace, Hold Even Temperatures, Insure Better Combustion and Save Coal. Types for Soft and Hard Coal. F. H. Foust, O. G. Jones and Carl Johnson Give Experiences on Their Farms

By ARLEN MARSH

Mr. Marsh lives in a small town—Oregon, Illinois. He writes for business magazines and knows stokers from his connection with a stoker manufacturer.

MANY of us have longed for janitor service on the mornings when ice covered the watering trough and the wind blew from the north! It would feel good to get up in a really warm house!

For a good many who have electricity this wish is a wish no longer. Stokers, operated inexpensively by the same current that runs milkers and washers, pumps and vacuum cleaners, have given these farms pleasure, health, convenience—and at the same time have given them very real savings in fuel costs.

Take F. H. Faust, for instance. The Fausts live near Lima, Ohio, and operate an ordinary, well-kept farm. Mr. Faust makes no bones about what their seven-year-old stoker has done for the Faust family:

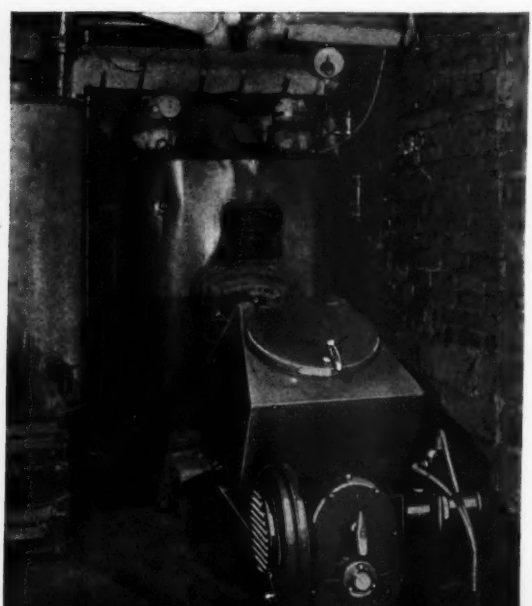
"You have to live with it," he said enthusiastically, this last August, "to fully understand and appreciate it; it's one of those things there don't seem to be any words to describe. But I can say it's the one best investment we ever made and those who are still trying to keep their homes comfortable in winter by the old methods of firing are depriving themselves of one of the greatest joys of life!"

There must be something to stokers to make an owner talk like that! There is. They're simple enough machines, in themselves—with different sorts of gearing and controls and shapes, depending on the kind you buy—but they accomplish something nothing but *automatic* heat could do. They save labor, time, trouble and coal.

A stoker's first purpose is convenience. You don't have to bother about frequent "firing up." You don't have to change drafts and shake down ashes. You do have to supply the hopper with coal now and then—in ordinary weather, not more than once every two days; and you do have to take out clinkers—once a day in extreme weather, every two or three days in mild weather. About five minutes work a day does the trick! It's not surprising that O. G. Jones of Mt. Sterling, Illinois, insists that his stoker ranks with the electric range and refrigerator in the opinion of his wife!

Mr. Jones, however, has another reason for liking his stoker. He's lucky enough to live near the central Illinois coal fields, where coal is unusually cheap. His big house cost him twenty tons of good coal a year until he installed a stoker. Since then, he's heated every room in the house better than the rooms ever were heated before, and he's used only 12½ tons of coal a year at a cost of $1.50 a ton. The stoker takes very little electricity, and Mr. Jones says it has saved him money—a good deal of money—in the first year of operation.

Then there's the matter of the children. In town it's bad enough. Babies will play on the floor, and floors will be drafty. In the country, where the wind often has an unbroken sweep for miles, the



This stoker has been in use seven winters on the F. H. Faust farm. Mr. Faust says that instead of being an expensive luxury, it has proved to be a highly profitable investment. Besides paying for itself in coal saving, it has brought greater comfort, health and peace of mind.

Carl Johnson stoker installation, south of DeKalb, Illinois. It handles up to 30 lbs. of coal per hour, and was installed in an old furnace.

drafts are worse. Keep the temperature even all over the room, and children don't get nearly so many of those annoying, dangerous colds.

Holds Temperatures Even

That's just what the stoker does—keeps the temperature uniform all over the room. Set the thermostat, say, at 72. The room stays at 72, even when the mercury in the thermometer outside the north window drops from 40 to 10 in half a day. Then at night, when you like it cooler for better sleeping, adjust the special clock control. The temperature drops to 50, or 60, or 65—whatever you like; and the next morning at 4:00, or 4:30, or 5:00 whenever you like—the temperature climbs to 72, and you get out of bed in a warm room. You don't have to break ice off the covers!

Carl Johnson of De Kalb, Illinois, runs a 600-acre stock farm. He has buyers visiting him from all parts of the world. He takes prizes at half the State fairs. He's an officer of the local Farm Bureau. Because he's away from home a good deal, he's particularly glad that his stoker works so well.

"I don't have to be afraid that my wife and children are cold when I'm gone," he told me on September 7. "They don't like to tend fires any more than I do." He grinned. "Besides that, there's my furnace to be considered, too. It's an old one, and I don't want to replace it right away—didn't want to two years ago, when I bought my stoker. I won't have to, either. The stoker's been saving me about $40 a year in fuel costs alone, and it's been treating the old furnace so well that the thing will last for years yet.

"One of the best parts about it, is that a stoker won't explode—anyway I haven't heard of one exploding; and a stoker won't overheat the furnace, or spill live ashes out on the floor, or do any of the other darned things that happen with hand-firing. You don't have to worry about whether you're going to have to live with the neighbors until they can hold a building bee in the spring.

Even if you want to use a stoker for heating barns as well as house, it takes no engineer to operate the thing. The same simple, convenient methods, filling the hopper, taking out the clinkers—are all you need. And if you don't like to fill hoppers, you can buy models that feed coal directly from your bin. In the anthracite-burning regions, you can get stokers that will carry off the ashes, too. (Hard coal, unlike soft coal, doesn't form clinkers.) Finally, you can use stokers for heating water in the summer—and *without* heating the house at the same time!

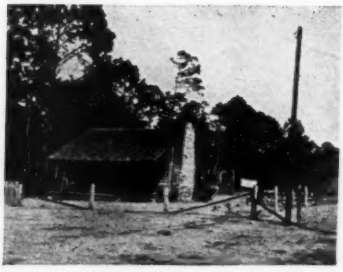
All told, you get a good deal when you use a stoker. C. V. Van Horn, out on Route 1, close to Lakeview, Ohio, called it "city comfort." Maybe he was right. Anyway, heat—even, dependable heat—is coming to the farm!

—the proud Farm a Tractor—

Farmer Moves House to Get Electric Service

By CARL HANCOCK

Extension Service, Univ. of Georgia, Athens, Ga.



THIS is the house of Lowell M. Duncan, twenty-six year old Georgia farmer who has had a life desire for electric service.

The Duncan home was 2,400 feet from a new power line which was being built. It seemed as if a dream might come true. Investigation, however, disclosed that the cost of a 2,400 foot line extension was beyond the Duncan resources.

Things looked dark; but two weeks later Lowell Duncan was back in the office requesting electric service.

"So you have decided to build the line over to your house."

"No," Duncan replied, "I just moved my house over to the line."

It was literally true. He had moved the small farm house a distance of about 800 yards at a cost of less than $35.00, thus saving some $130.00; and now the Duncans have their long cherished electricity.

PLUMBING *for the farm home*

Part 2

Where Can We Put a Bathroom? Sizes of Plumbing Fixtures and Space Required. Pointers on Piping, Valves and Fittings

By NORMAN J. RADDER
Secretary Plumbing and Heating Industries Bureau

ONE of the factors which must be taken into consideration in the selection of fixtures for the farm bathroom is the space available. While a space 5 feet square is adequate to accommodate a bathtub, lavatory, and closet, it is preferable to have a room at least 5½ by 7 feet. It is a great convenience to have a bathroom large enough to accommodate a linen cabinet.

A large clothes closet, a hall-end, or part of a bedroom can be used for a bathroom. Many farm houses have bedrooms that are larger than necessary and frequently enough space for a roomy bathroom can be taken from the largest bedroom.

It is not necessary that the bathroom be square. With a little planning and the advice of an experienced plumbing contractor, a very charming and distinctive bathroom can be made out of an irregular room. Thus a recess five feet long or five and one-half feet long may be used for the tub. If the recess or "jog" in the room is not so large, it may be used for the lavatory or for the closet.

Shown in connection with this article are two bathrooms made out of unused spaces. One was made from the end of a hall. The lavatory is not shown in the picture. Fixtures such as those shown in this illustration are within the means of the family which of necessity must practice the strictest economy.

The other two views show how a large closet was made into a very modern and attractive bathroom. It is evident at a glance that the fixtures installed in this bathroom are far superior in appearance. They have a smartness and beauty that helps to make this bathroom a very beautiful room.

Plumbing Purchased for Life

Furthermore, the beauty of the fixtures shown is more than skin deep. Faucets, valves, and closet mechanism all are much superior in design and durability. The difference in price between the two bathrooms is from $50 to $75. While $50 is quite an item for many families, it should be remembered

Upper: Just a closet in a farm home; or it might have been a pantry which was not needed after a modern kitchen was installed.

Lower: And here is the old closet done over as a modern bathroom. Note the water proof paper, the water-saving shower nozzle, the pedestal lavatory and the modern tube lights on either side of the medicine cabinet.

that plumbing fixtures, unlike automobiles or radios, are bought for a lifetime of service. Spread over a period of years, the price differential is small. Furthermore under the liberalized Title I of the Federal Housing Act, the family has from three to five years to repay an F.H.A. loan for the installation of a pressure water system, bathroom, sink, laundry, and septic tank.

Sizes of Plumbing Fixtures

A word about the dimensions of plumbing fixtures. The average bathtub is five feet long and thirty inches wide. If space is limited, a tub only four and one-half feet long may be used. Some people prefer a longer tub and many baths five and one-half feet long are sold. There is also available a new type of bath four feet square with seats in the corners. Some of the rectangular models, too, may be obtained with seats built into them either at the end or sides.

Bathtubs should not be placed under windows, if this can be avoided.

No other plumbing fixture is made in such a variety of sizes and styles as the lavatory. A mere listing of all the sizes would fill a page in ELECTRICITY ON THE FARM. Suffice it to say that the sizes most suitable for the average farm bathroom or first-floor washroom are 20 x 18; 24 x 21; 18 x 15; and 19 x 17.

Three types of tube are available for the farm laundry. In the lower price bracket is the two compartment tray made of cement composition. This tub is made in three sizes, 24 x 48; 24 x 54; and 24 x 72.

Three types of tubs are available for the farm cast iron or solid china. The glass-like surface of the china and acid-resisting enameled trays is impervious to acids and strong alkalies and is strongly recommended for the farm home.

Piping, Valves and Fittings

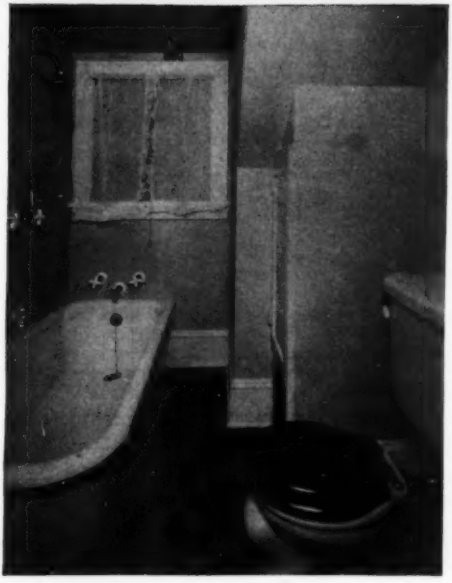
So much for the plumbing fixtures—the visible part of the plumbing system. No less important than the fixtures is the supply, waste, and soil piping and the valves and fittings. It is impossible for the fixtures to give satisfactory service unless the supply and waste piping is adequate and correctly installed.

The function of the water supply piping is to provide an adequate flow of water at every fixture at all times and under all conditions. Nothing is more annoying than a mere dribble of water from the faucets on the second floor when the plumbing fixtures on the first floor are in use or when water is being used for irrigation or for the watering of stock.

Inadequate volume of water and poor pressure can be avoided by having a water system and piping layout that is big enough for the demands that will be made upon it. Again readers are reminded of the importance of having a plan to start with. The first step in the making of the plan is to total the water consumption at all outlets, in the house as well as in the barn, dairy, chicken house, garden, and elsewhere.

The farmer who has his plumbing system installed under the supervision of an experienced and reliable plumbing contractor need have no fear that his system will be undersized. Contractors who have installed rural water systems usually know how to estimate water consumption and thus arrive at the proper pipe capacity.

From each lavatory faucet, for instance, the rate of flow should be not less than two and one-half gallons per minute. The tub and shower supply should provide a flow of at least ten gallons per minute. The kitchen sink should have a supply of at least seven and one-half gallons per minute of hot and cold water. The capacity of the system should at the very least be sufficient to permit the



Upper: This end of a hall which had little use was made into a convenient bathroom.

Lower: Here is the hall-end bath room after it was worked over. It contains a tub, shower, toilet and lavatory.

simultaneous use of those fixtures and equipment which experience indicates are likely to be used at the same time.

The size of the service line from the pneumatic tank, if it is a pressure system, or from the storage tank, if it is a gravity installation, is obviously very important. A service line of not less than three-fourths of an inch is recommended by the Institute of Hydraulic Research of the State University of Iowa which has for some years been carrying on an extensive research program for the National Association of Master Plumbers and the leading manufacturers.

Small Piping Poor Economy

It is a mistake, the Institute says, to install a service line of only five-eighths or one-half inches in diameter. Other factors which affect the rate of flow to plumbing fixtures are: The diameter of the supply lines to the individual fixtures; the design of the piping system, that is, if it is relatively straight or if it has many bends; number, character, and diameter of valves; and the presence of scale, solder, or pipe shavings on the inside walls of the pipe. Branch lines to individual plumbing fixtures should be not less than one-half inch in diameter, says the Institute.

The experienced master plumber will design the supply piping so as to avoid unnecessary changes in the direction of the piping. Every elbow introduces friction losses into the line which in turn reduces the flow of water. The friction loss of one elbow is equivalent to the loss in pressure caused by several feet of pipe.

The presence of scale, solder, or pipe shavings on the inside of a pipe tends to set up a resistance to the free flow of water. The better grades of pipe are carefully treated to remove scale before the pipe is allowed to leave the mills. Similarly nipples and fittings made by reputable manufacturers are free from scale and carefully treated to withstand pressures for which the manufacturers recommend them.

Experienced plumbing contractors know the importance of carefully reaming pipe so that shavings will not be left on the inside of the pipe. Similarly in soldering sweated fittings on pipe, good workmen will not permit excess solder to gather on the inside of the pipe.

Big Difference in Valves

The size, quality, type, and location of valves has an important bearing on the performance of a plumbing system. There are two types of valves in general use in residential plumbing work: The globe valve and the gate valve.

The gate valve offers virtually no restriction to the flow of liquids through it. As the name implies, it is a gate through which liquids can flow freely when the valve is fully opened.

The globe valve, on the other hand, is so constructed that it necessarily offers resistance to the flow of water. A one-inch globe valve introduces a friction loss equivalent to 28 feet of pipe. A one-inch gate valve fully opened is only equivalent to 0.6 feet of pipe.

There is, however, another difference between the two types of valves. Globe valves are so constructed that the wearing parts can be replaced readily.

With gate valves it is difficult and expensive to replace seats although discs may be replaced.

For these reasons, despite the friction loss, it is advisable to use globe valves in places where the valve has to be opened and closed frequently. If the use is relatively infrequent, the gate valve will be preferable.

Valves and fittings are a most important part of the piping system of the house. In the case of an average two-story farm house, about 300 feet of piping with fittings is concealed in the walls and under the floors. Obviously this part of the plumbing system can be repaired only at great expense. It is most important, therefore, that this hidden piping with its fittings and valves should be of the highest quality. The difference in cost between valves and fittings of the best quality and inferior products is negligible when compared with the total cost of the plumbing system.

The piping should be well equipped with shut-off valves for branch lines and should be so pitched that the entire system can be drained at one point.

An inadequate supply of water at the faucets is not merely an annoyance. It may be a menace to health. Under certain conditions, negative pressure in the supply lines may permit drawing in of polluted water through a cross-connection or an improperly designed fixture or unprotected submerged inlet, thus causing pollution of the pure water.

Similarly improper sizing of the piping may cause "starving" of the water supply for certain fixtures. Thus if one person is taking a shower while another person opens a sink faucet, the sudden drop in pressure of the cold water may result in the scalding of the bather.

It is an interesting fact that the diameter of pipe changes with use. This is particularly true in regions where the water is hard and where lime deposits form on the inside of the pipe, thus reducing its diameter. All piping which is exposed should be well insulated to prevent freezing. Soil and waste pipe should be fitted with clean-out plugs.

—the proud I am a farmer—

How to Save Fuel This Winter

Few houses are so well constructed and sealed that they do not lose tremendous quantities of heat through unnecessary air change and conduction. Heat conservation can be approached by way of weather stripping all the openings, providing storm sash on windows and doors and by insulation. For money expended, the insulation of the roof or the top floor ceiling gives greatest returns. Insulation of roof and side walls, without storm sash or weather stripping, usually results in 30 to 40 per cent fuel saving, the majority of which is due to roof treatment. Storm sash and weather stripping without insulation can be expected to give 25 to 30 per cent fuel economy. Weather stripping alone results in 15 to 20 per cent savings. A complete program of heat conservation through the utilization of all three methods can be expected to average a saving of 60 to 65 per cent in heat losses.—*W. C. Krueger. Agricultural Engineer, N. J. Extension Service.*

Fresh Air Saves Wet Onions

On the left is shown an onion afflicted with all the ills that befall wet onions sweating in improperly ventilated storage. Shown, too, is a sound onion salvaged from bins where electrical venting aerated wet, untopped onions placed in storage.

It Rains. Onions Need to Be Dried. They Spoil. What Can Be Done? Louis Garbarino Saved His with Electric Blowers

By BEN MAXWELL

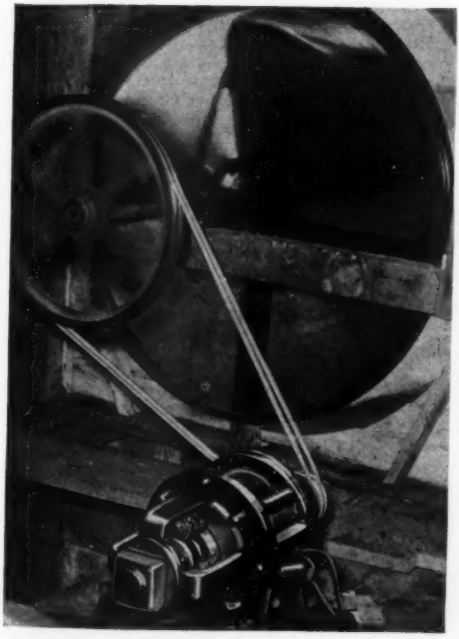
Ben Maxwell is a camera-ized, pen wielding Oregon farmer.

APPLICATION of modern, electrical methods to onion farming in the Lake Labish district near Salem, Oregon, has made this industry a safer, more efficient and profitable industry.

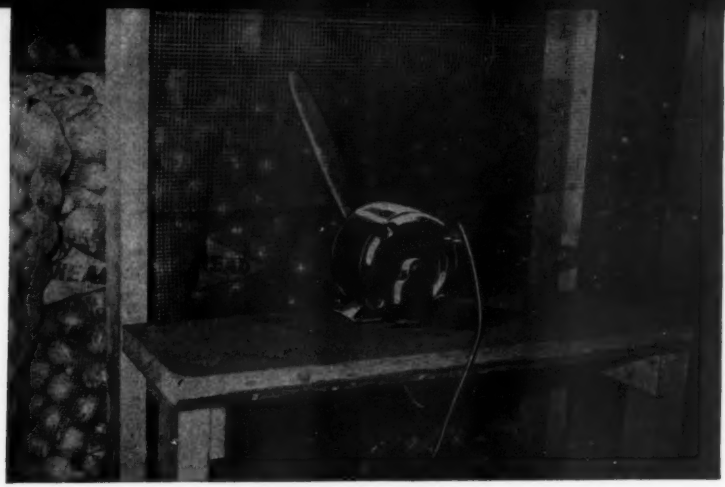
Consider Louis Garbarino's problem, for instance. Louis was up against it until Bill Newmyer, field man for the local power company, suggested and directed the installation of electrical onion drying that saved a substantial proportion of this grower's crop.

It happened this way: Louis, like other growers, was confronted with unseasonable weather. For weeks after the onions were dug, rains and fog prevailed daily. There was no opportunity for the onions to dry and cure in the field as they ordinarily do. Like others, this grower hauled his wet, untopped onions into the house, stored them 36 inches deep in the bins and hoped for the best.

Within two weeks all the ills that infest wet onions in storage were rampant in Louis Garbarino's bins. Since the onions remained too damp to top, neck rot was assuming alarming propor-



This 60-inch spiro-vane fan, operated at 380 r.p.m. by a 3 h.p. electric motor, saved a substantial portion of Louis Garbarino's onion crop by changing the air in his 42x80 ft. onion house once in every 3½ minutes.



Practical portable fans with 26 inch blades operated by 1/4 HP motors are used to aerate storage bins in this onion house. They are moved hourly during the crucial drying season.

tions. Sour skin, too, was beginning to appear. Besides, there was plenty of base rot and white rot was becoming apparent.

Louis Garbarino was mighty discouraged. It looked hopeless and he told Bill Newmyer so when he called him for advice and suggestions.

But Bill was not so pessimistic about it. Something still might be done to salvage a portion of the crop.

Within a few hours a 3 h. p. motor was driving a 60-inch spiro-vane fan in the onion house gable. It was an emergency installation but it was doing the job of changing the air in this 42 x 80 storage house once in every 3½ minutes.

After 150 hours of continuous running some bins that once appeared as a total loss were dry enough for topping. In 400 hours of operation the grower was able to top and salvage $500 worth of onions from bins that once looked like a complete loss. This was followed by other carloads.

Salvage costs were not excessive. The motor and fan installed cost $245. And the cost of operation was less than $20 a month, or around 5 cents an hour.

Other growers in the Lake Labish region have also learned the advantages of electrical methods in onion production. Hayes Labish Farms, largest producers of onions in Western Oregon, use portable fan units for aerating storage houses. Units consist of 26-inch propeller type fans direct-connected to ¼ h. p. motors. They are moved about the storage house at one-hour intervals during the crucial season when damp onions are in storage.

Besides fans, onions graders, toppers and conveyors are electrically operated at the Hayes Farms. The cost of operation is less than with gas engines, according to Manager A. F. Hayes. Besides, electrical power is more reliable. And this is important when a crew of 9 is dependent on motive power.

An onion grader, run by a ½ h.p. motor has a capacity of 150 sacks per hour.

This farm also uses several reversible conveyors, designed for efficiently handling sacked onions and operated by ½ h.p. motors.

Electrical methods, as applied to onion production in the Lake Labish district, have enabled growers to harvest and save their crops when natural conditions were persistently unfavorable. Electrical methods, too, have made onion growing a more efficient and profitable business.

A 1/4 HP motor operates an onion grader with a capacity of 150 sacks an hour.

Electrical HOUSEKEEPING

Conducted by GAIL MEREDITH

Getting Acquainted with your Electric Ironer

By VERA B. ELLWOOD

Director of Home Service of the Milwaukee Electric Railway and Light Company, Milwaukee, Wis.

LIKE a car or a sewing machine, an electric ironer can save your strength and energy to use in other ways and in many cases save your time too, but like the car or the sewing machine you must first learn how to operate it and then you must allow yourself plenty of time to practice before you can expect to do an expert job. At first you may even need more time to do your ironing than with the familiar hand iron that you have been practicing with so many years.

It will require practice, just as it did when you learned to use an electric iron. Be patient, sit comfortable, learn your ironer, and ironing day will be a pleasure.

Let's pretend your new ironer has just been delivered to your home and there it stands, all ready for you to begin to use it. What shall you do first? If it has a cover which is removable by lifting up or by swinging to one side that is the first thing to do. Then if you will follow in some such order as this, and as you do each thing, you will say out loud what you are doing, you will find yourself getting familiar with the way it operates much more quickly than if you go at it in a haphazard way.

Iron Stays Still—"Board" Turns

The electric ironer pictured has a shoe that heats, which corresponds to your electric iron, and a roll, which corresponds to your ironing board. Unlike your iron and ironing board the shoe remains in place and the roll turns and carries your ironing with it. Suppose you have an ironer with a two-temperature regulator—you will first adjust the shoe so that it is brought close to the roll—not against it, but up to it. Then you will set your temperature regulator to "low" heat—this is to give you time to practice without heating up the shoe too much. Now turn on the switch which controls the current—you will probably have a pilot light showing that the heat is on. Then turn the switch that starts the motor.

Some ironers have a lever which may be set to regulate the speed of the roll. We will set that lever at "low" to begin with. If your ironer has a finger tip control for starting and stopping the roll and bringing the shoe down to it you will practice with this first. After practicing with the finger tip control you can practice with the knee control—which is the one you will use for most of your ironing.

When you have finished practicing, turn off the heat, then the motor and last, adjust the shoe back away from the roll to cool.

Use a Chair of Correct Height

Here is a word of advice which will make quite a difference in the ease and comfort you will have if you are particular about heeding it. Always use a chair which is correct in height so that your knees are comfortable as you sit at the ironer.

After you have gone through the mechanics of getting your ironer ready to use and put away a few times you are ready to begin the job of ironing. When you were a little girl learning to iron your mother let you begin with the small flat things like handkerchiefs and towels and they are the things for you to iron first on your new ironer. For the more complicated things like the shirts and dresses follow the order which is given in your instruction book—but be patient with yourself in learning to do these—it will require practice just as it did when you learned to do them with an electric iron. Before long you will be looking forward with real pleasure to ironing day.

Thanksgiving Pies

WE had gone early to get a good seat. Cooking schools in our town are always crowded, particularly when Joan Carter does the talking.

She came out on the platform in her starchy white uniform with a silk handkerchief in that new Chianti red in an upper pocket. Picking up a piece of chalk with a friendly wave for our welcoming splatter of handclapping, she began, as she always does, to talk about her subject without delay or meandering.

"No matter how it starts out," she said, "the chances are that your Thanksgiving dinner will end up with a thick brown wedge of pumpkin pie. To help you make better pies this holiday time,—and all the year,—I've been spending a lot of time in food laboratories and talking to good cooks to find the newest ideas in making pastry."

She stopped a minute, her brown eyes studying us, and a little smile bringing out a dimple in her left cheek. "Now that I have them, they seem so simple that I wonder whether they're worth your effort in coming down here this afternoon. But so many of you *do* say you can't make good pies, that I'm going to tell you about them anyway. In the first place, let's agree on a recipe."

Swiftly she wrote it out on the blackboard behind the table.

Flour	1½ cup.	Fat	½ cup.
Salt	¼ tsp.	Water	¼ cup, approximately.

"That's the recipe I've always used," whispered Jane Rowell who had come with me, "and it doesn't make good crust at all."

I nudged her to keep still for Jane is the arguing kind who always wants to talk things over instead of listening, even when she has a chance like this to find out why that recipe doesn't make good pies in her kitchen.

Miss Carter had gone over to the refrigerator that stood at the right of the stage, and was taking out a package of lard and a bowl of water with ice cubes bobbing around the top.

"The first thing to make sure of," she went on, unwrapping the lard, "is that your fat is really cold and hard. Watch your measurements and keep them accurate. If you want an easy way to measure half a cup of lard, fill a cup half full of water then drop the lard in,—like this,—till the water touches the top rim. I can drain off the water," doing it as she spoke, "and my lard is accurately measured."

She dumped it into a wide blue bowl and poured over it a little mound of flour from a paper on the table.

"The salt is in the flour," she commented. "And I'm going to cut the fat into the flour with this pastry blender." She held it up so we could all see the loops of stiff wire curved down from a substantial looking handle.

Put the pastry in the refrigerator to chill before you roll it out.

"I've seen those," muttered Jane.

The blender rose and fell quickly.

"Perhaps you do this with your fingers," Miss Carter said. "Or maybe you use a couple of knives. It doesn't matter. We all have our preferences. But it does matter how long you mix it. Cut the fat into the flour until the mixture is

WHAT I WANT IN A RANGE

Winning Letter for August Contest

Way long last August, a group of you took up your pens or sat down to your typewriters and wrote me firmly what you would demand if you were buying a range. The letters were all interesting, even the one that reported word by word, and comma by comma, a catalogue description of a new electric range. It told what the writer was going to look for, didn't it?

The letter we've chosen this month was written by Mrs. Virginia Stickley of Stephens City, Virginia. Though Mrs. Stickley can't get over thinking that I'm a man, she writes about the things that a woman is interested in, doesn't she? Please Mrs. Stickley, not *Mr.* Meredith!*

* * *

Dear Mr. Meredith:

I want a stove as well made as the maker's label it bears. Did anyone ever see either in coat or car the manufacturer's label give way in spots? After this prerequisite I'd want a range that cooks but leaves my kitchen cool.

The "level working surface" craze has pushed baking back into that back-breaking age. I want my oven at standing height. Juggling custard pies at a low oven while on my knees makes my position incongruous with my thoughts! Of course, an oven must have a thermostat. Several layers of grooves on each side of the oven for adjustable baking racks would be ideal for odd height baking utensils. If the oven were at standing height this would bring up the broiler.

Why couldn't a warming unit comparable to the old wood stove warming-closet be built, possibly heated by deflected heat and so at no appreciable extra cost? For us, and we are legion, who serve "restaurant fashion," the keeping of food hot and edible is a problem. And for serving those foods that require constant attention while cooking, that problem of keeping hot the already prepared foods would be solved.

Automatic cut-offs and adjustable cooking temperatures save taut nerves, thousands of steps, and countless dollars in ruined foods.

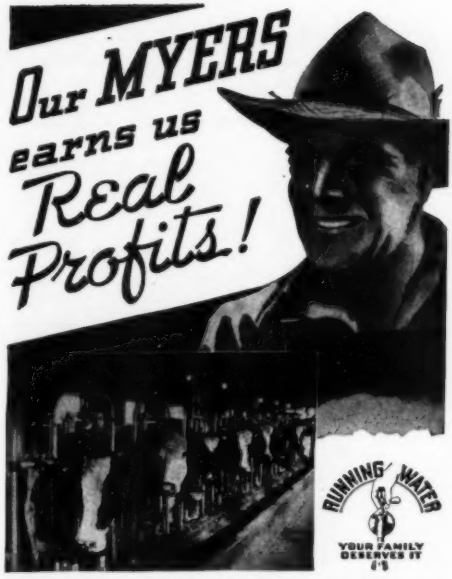
After all, all I want is a range like "The Deacon's Masterpiece," "The One-Hoss Shay."

VIRGINIA STICKLEY.

grainy, but not too fine. Leave pieces of fat as big as a nickel here and there."

"What difference does it make how long you mix it?" asked a big woman in a green hat.

"If you overmix it the flour is so coated with the grease it will not take up enough water to make your pastry flaky," answered Miss Carter, laying down the blender and turning some water into a cup. "Now watch," she went on, pouring the water slowly with one hand while she gathered the moistened flour together with a few strokes



NO, Sir! A reliable MYERS Water System is far from *expensive*. While it introduces luxurious comfort and convenience to the home, MYERS famous quality construction supplies running water at such *low cost* that the time saved, the tasks lightened and the added productivity which results earn real profits for many a farmer. Deep well and shallow well models to meet all needs; for operation by electricity, gasoline engine, windmill or hand power.

Fig. 3012 **"Pump Builders Since 1870"**

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Hand Pumps	☐	Power Sprayers	☐
Pump Jacks	☐	Hay Unloading Tools	☐
		Door Hangers	☐

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Take Off Your Hat to The MYERS

of a fork. "I try to add the water as evenly as I can until the flour is all dampened."

"Do you always use a quarter of a cup of water?" asked Jane.

"No. It is difficult to give the exact amount of water, because it differs with the temperature,

Making a good smooth pie shell.

with the rate of adding it, and with the care you've taken in mixing the fat and the flour. You want enough so all the flour will come away from the sides of the bowl, but not enough to make a sticky dough."

She was pressing the mixture firmly together with her hands as she spoke, and then she broke it apart in two slightly unequal balls. She wrapped each in waxed paper.

"I have found," she said, going back to the refrigerator, "that the dough rolls out very much better and makes more tender pastry if I chill it three or four hours before I use it."

She put the paper covered rolls on a shelf and took out another that looked just like them. "Here is some pastry we mixed early this morning."

Back at the table she pushed the bowls and the cups aside and spread out a wide piece of canvas, well floured, I could see. On this she laid the ball of dough, flattening it out with her hands.

"Lots of women tell me they just can't roll out pie crust. See how easy it is with cold dough on a lightly floured canvas like this, and a thin film of flour on my rolling pin."

Setting the rolling pin down in the middle of the dough, she began rolling with quick light strokes, moving always from the center to the outer edge of the circle of dough, and lifting the rolling pin each time, so she wouldn't get the outer edge too thin, she said. When the circle was some two inches wider than her pie plate, she started at the edge of the dough and rolled it over and over on the pin.

We gasped in consternation, but before we even caught our breath, she had lifted the rolling pin over the pie plate and was neatly unrolling it, right in place.

"Oh," we chorused in admiration.

"That's one of the hard parts," said a woman behind me. "If I do get my pie crust rolled out, like as not, it splits when I try to lift it into the pan. And half the time, it doesn't quite fit, and I try to stretch it just a little bit——."

"No don't stretch it," cautioned Miss Carter, as she deftly fitted the crust into the pan, and held it up to snip the edge off evenly, a good inch beyond the tin. "Roll it to fit."

She set the pan down on the table and looked out over her audience. "Now I want to say a word about these lower crusts. You know there are chefs who brush the crust with a light covering of melted butter, or egg white, or dust it with flour to keep a good crisp lower crust on a berry pie. One chef I've heard of sprinkles the lower crust with sugar before adding the filling. The hot oven melts this and forms a glaze. There is a new way I've run into this year. Roll out that lower crust and set it in the refrigerator to chill two or three hours. Take it out when you begin to make the filling."

"Are you baking these pies in that range or in the refrigerator?" asked some one behind me.

"If you had said making instead of baking, I'd have answered 'both' without question," laughed Miss Carter. "They both have a hand in it as you see."

"How do you make a good pastry shell?" asked some one else.

"Easy enough," said Miss Carter. "My good friend Lucy Maltby taught me that some time ago. She is the home economist for a big manufacturing company and the author of a fascinating cook book for the small fry, "It's Fun to Cook." Perhaps you've seen it. If you're cooking with oven glass, just put a second pie plate inside the pastry and bake it that way. When you take the plate off, you'll have a smooth even pie shell ready for its filling. You can do the same thing with a metal pie tin, but you can only leave it on for the first part of the baking. Take it off after ten minutes and leave the crust in for another seven."

"At what temperature do you bake your pies?" asked Jane.

Miss Carter took a pastry lined pie plate from the refrigerator and opened the oven door of the big electric range at our left. She slid the pie

"I set my control at 450 degrees to begin with," says Miss Carter, "Then I lower the temperature to fit the filling."

November Contest

When our forefathers stayed their labor after that early difficult harvest to give thanks to God for the bounty of his fields, for freedom to work and worship in this new land, they set us an example we do well to follow. In spite of the things we lack, in spite of the roots of bitterness that seek foothold among us, we still have great cause to give thanks—as a nation struggling towards unity and prosperity and peace, as citizens of "no mean country", as the women of the house.

When I was a child, my Grandfather always demanded that we begin every Thanksgiving dinner, each of us, with a recital of our particular reasons for gratitude that Thanksgiving Day. It was not a bad thing to make us recognize and acknowledge what they were.

The letter this month will give you a chance to cast up your accounts with gratitude. "For These I Am Thankful" is the title. Keep it down to five hundred words, please, and send it to me by November 20, to Gail Meredith, 1026 Seminole Highway, Madison, Wis.

If we publish your letter, we will send you a check for five dollars.

onto the middle of a shelf up three guides from the bottom. I was near enough to count them.

"Because you may not like my pies and I may think your pies a trifle pale, we can't be too didactic about this matter of baking. I have the control set at 450 degrees. You will find good authority for setting it at 400, and cooks who use a hundred more. You will find experts who say to bake pies at constant temperature, and you will find others who begin to bake their pies at 450 and turn the control down to 300 or 350 for the rest of the baking; to fit the filling, they say. The material of your pie plates as well as the color of your pies influences the temperature that is best for you.

"The only advice I can give you is to try out these different temperatures and methods carefully, until you get just the right brownness and flakiness to suit your folks. Then stick to that temperature and method.

"Measure accurately; mix quickly; roll lightly; chill thoroughly; bake—"

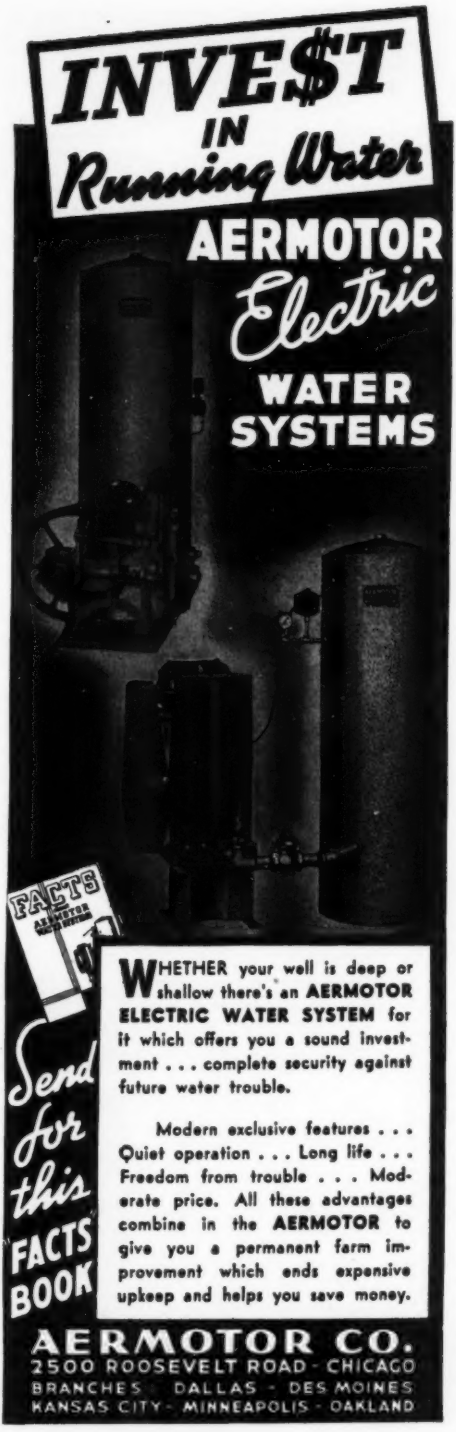
"To suit yourself," put in the woman in the green hat firmly.

Miss Carter laughed.

"It amounts to that, doesn't it? But anyway, if you'll do these things, I'm sure you too will discover that you are developing what my English grandmother used to call a 'light hand' with pastry."

A NUMBER of farmers in the vicinity of Aurora, Illinois, are using all-night lights controlled by photo-electric cells for protection from prowlers. The photo cells turn the lights on automatically at dark and off again at dawn.

A PLOWMAN on his legs is higher than a gentleman on his knees.—*Benjamin Franklin.*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ON THE AIR

Conducted by
JEROME J. HENRY

Answers Bring Big Laughs

IT'S the wrong answers, not the right ones, that give Kay Kayser and his audience over NBC stations a big laugh. Kay pops questions at his musical class over the air every Wednesday evening.

Kayser's orchestra played Shep Field's theme song and the contestant was asked the name of the band which the music identified. The answer: "Shep Fields and his Drippling Water."

The Toreador Song from Carmen was identified as "The Bull Song from the Metropolitan Opera House."

The tune "Heat Wave" was played. The contestant couldn't think of the title Kayser wanted him to say, so he asked the question, "what do you get in July and August?" "Hay fever" was the retort.

Often Kayser has an instrument played behind the contestant's back and asks that it be identified. Frequently the clarinet is identified as the saxophone and the trombone as the saxophone or clarinet. Three times the question, "Who wrote the "Star Spangled Banner," was asked. It was answered correctly only once. One contestant got as far as Francis Scott and couldn't finish it.

• • •

Kitchen Music Made Them

RISING to musical heights through the medium of such kitchen accessories as a tea kettle, coffeepot, and washboard is the unusual achievement of the gingery Hotshots, stars of the Saturday night barn dance program.

It began in Elwood, Indiana, when the boys were in high school. Each year a show was given by the students and each year the four boys, all versatile singers and musicians, stole the show.

To add novelty to those school shows they developed home made instruments. One played a tune on a whistle, another on a battered tea kettle, and a third lured music from a coffeepot while the fourth carried the air on a guitar. The performance was a success and on the strength of it they were booked for a summer at Anderson, Indiana.

After their season there the boys returned to school and completed their high school courses. But their fame had spread and upon graduation they were booked for a vaudeville tour. The four hotshots, Hezzie Trietsch, Gabe Ward, Kenneth Trietsch, and Frank Kettering, played their first vaudeville engagement in Indianapolis.

Several years later they decided to try the radio and got an audition at Fort Wayne, Indiana. They were successful. After nine months of broadcasting there, the boys went to Chicago. They have been regular broadcasters over the networks from there.

Another National Barn Dance picture, with Lulu Belle, and ballet dancer, Loda Halama.

Throughout their radio life the quartet has been

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Dept. R-24 Freeport, Illinois

known by a trade trait that seldom is recognized as such. As they get a cue from their director, Frank asks, "Are you ready Hezzie?" and Hezzie answers: "Fetch up the zither."

Clinton Rises Quickly to Fame

THE Dipsey Doodle is not Larry Clinton's only claim to distinction. Last year the radio maestro, according to his statisticians, arranged more than one-fourth of all songs published, a record that established him as the most prolific arranger of popular dance music.

Clinton stepped from the ranks of arrangers to conductors when he was offered a contract to make recordings for Victor. The young conductor had just come into prominence through his compositions, "Satan Takes a Holiday" and "Study in Brown."

Few bandleaders have made the ascent to fame as spectacularly as the 28-year-old composer-conductor. In 1938 Larry gave up his job as a vacuum cleaner salesman to become a second trumpet player with Ferde Grofe's orchestra.

He is especially grateful to Grofe for discovering his talent for arranging and for urging that he take up arranging as an occupation. He also appreciates Tommy Dorsey's assistance during their work together to popularize the Dipsey Doodle.

Aside from his bandleading and writing activity, Clinton lives quietly in New York. Previous to leading his own orchestra he had time to enjoy candid camera photography, but during the past few months he has been working 17 hours a day and trying to relax with an hour of bowling before retiring.

Thankfulness

A tallow candle's fitful glow
Served people in the long ago;
In market place, in church and home
Its modest light in glory shone.
But time and progress hand in hand
With mind and matter change a land,
And things required as needed come
To man and beast beneath God's sun.

Now, on this ever rushing plane
Of physical and mental strain
Electric service comes to aid
We rural folk in life's parade.
Nor could its use be needed more
In mill or factory, mart or store.
And never could a class express
In higher terms..their thankfulness!

ESTHER CUSHMAN RANDALL
R.F.D. No. 6, Coldwater, Mich.

Electric Refrigerator Helps Milk Profits

We do so many things on the farm that it would not be possible to do, were it not for electricity. For example, my electric refrigerator enables me to sell my cream direct to customers, and having this direct market, our five cows have averaged $25.00 per week all summer. Much of my housework is a mere nothing because of electric aids.

MRS. H. G. ROSEWARNE,
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Slayden 4-H Electric Club First in Mississippi

These boys are workers. They are members of Mississippi's first 4-H Electric Club. They meet at homes of the members and each time do some practical and instructive piece of work for the farm at which the meeting is held. Activities include wiring, construction of practical equipment for the farm such as yard lights and the driving of different farm machines with portable motors. There has been a 100% attendance at every meeting

and the boys are always anxious for the next one. F. M. Hunter, Mississippi Extension Specialist, is responsible for the club. Left to right are: H. I. Weeks, Asst. Co. Agent; Clifton Harveill, Sam Lofton, Jr., Sennett Watkins, Donald Boys, Billy King, Johnnie Herrin, Billy Lofton, Ralph Lofton, Evert Dean West, and Buster Beaureguard.

Wisconsin Issues General Orders on Electric Fences

General orders on electric fences effective October 6, 1938, have just been issued in bulletin form by the Industrial Commission of Wisconsin. The order was based on recommendations of an advisory committee headed by Prof. F. W. Duffee. They cover definitions, general requirements and standards, construction, use and tests.

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QUESTIONS and ANSWERS

Kw.-Hrs. to Heat Water

Question: *What are the number of Kw-hrs. used by an electric water heater per gallon?* D. B., Ind.

Answer: Under actual test one kilowatt-hour of electricity warms six gallons of water from 65° to 150°. The rate at which the water is heated will depend on the wattage of the heating element used.

Honey Uncapping Knife

Question: *Today I received an inquiry from a customer regarding the possibility of securing an electrically heated honey uncapping knife to replace the steam one he now uses? Do you know of such equipment.* E. J. G., Mo.

Answer: The Walter T. Kelley Co., Paducah, Ky., and P. W. Pierce, 340 Crosby St., Altadena, Cal., make electric uncapping knives. Price, $7.50. Electric uncapping planes are made by the Rosedale Hutterain Mutual Corp., Elie, Manitoba, Canada.

Mosquitoes in Cellar

Question: *Please tell me how I can get rid of mosquitoes in the cellar. There are swarms of them since the hurricane.* Mrs. C. B. W., Mass.

Answer: If the celler is wet you should get rid of the water first by draining or pumping. You will speed the drying out process by opening the windows and exhausting the air by putting a large fan in one of the windows. If there are wet spots where you cannot get rid of the water, spray a very small amount of coal oil on the surface. This will kill the larvae. An atomized spray of Flit, or similar fly spray will help to control the mature insects.

To Protect Pump from Freezing

Question: *I have an electric pump in a well curb 4' x 4' x 4' and would like a heater that would turn on at a temperature slightly above freezing and off again as the temperature rose. Can you*

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Preferred the world over for its greater speed, ease of handling, rugged, lasting durability.

tell me who manufactures such a heater with automatic control? J. L. H., Va.

Answer: The Burnham Boiler Corp., Irvington, N. Y., makes an electric steam radiator with thermostatic control which might answer your requirements. Wessix, Inc., 390 First St., Los Angeles, make convection type electric heaters with thermostats. Perhaps the least expensive arrangement would be for you to use an ordinary radiant or fan type heater, or just a radiant heater element and control it with a brooder or hotbed thermostat. Screw base heaters in various wattages and brooder thermostats may be obtained from the Lyon Rural Electric Co., 2075 Moore St., San Diego, Cal.

Keeping Water Pipe from Freezing

Question: *Can soil heating wire be used to keep water pipe from freezing in poultry houses? What would be the cost of installation and operation?* B. P. F.

Answer: Yes, soil heating cable is being used successfully for keeping water pipes from freezing. See page 8 of the January, 1938, issue for an illustration of this method. Wrap the cable around the pipe. A standard length of 60 feet of cable will use about 400 watts or 0.4 of a kilowatt hour per hour. At 3c per kilowatt hour this would cost about 1½c per hour for the time the heat was on. If you want less heat than that produced by 400 watts of current, use a longer length of cable. An 80 foot cable will use about 300 watts.

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Signed . . . Lloyd Jacobs Streator, Illinois.

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Reviewed by T. E. HIENTON

Names and addresses of manufacturers of the articles described in this column will gladly be furnished upon request to What's New Department, ELECTRICITY ON THE FARM, *24 West 40th Street, New York, N. Y.*

Electric Drive for Honey Extractor

A new friction drive attachment for a honey extractor is now on the market. The extractor is driven by a ¼ horsepower motor. A slight turn of the wing nut friction regulator starts the reel slowly. Part of the honey is drawn out at this low speed, and the reel then gradually speeds up to finish the extracting. It is claimed that the danger of breaking combs is practically eliminated. The friction drive is easily released and the reel is quickly stopped by a break on the center pulley. It is made in sizes to fit standard extractors. Price $6.90.

Fresh Coffee

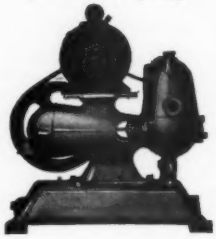
Fresh coffee from bean to coffee maker is now possible with a small electric grinder just placed on the market. It is adjustable for fineness and ready to grind at the snap of the switch. The grinder is made in two sizes, the one pictured at $9.75 and a larger size at $14.75, complete with coffee measure.

Carriable Electric Ironer

The latest in electric ironers is a table model which may be easily carried to the kitchen, sewing room or porch, as you like, and be plugged into a convenience outlet. It weights 25 pounds, costs $26.95, uses only 900 watts—no more than a new electric iron—and has a motor built right into the roll. There are just two controls, one for the heat and an elbow control for the ironing shoe and roller. It is claimed that it will iron anything from sheets to shirts.

New Line of Pumps

Streamlined pumps designed for precision, ease of installation and accessibility for repair is the claim for a new line of pumps being offered by a Middle West manufacturer. The pump shown herewith is a sample of the line. It has a 1 gallon pressure tank cast in the base and lists at less than $60.



New Publication

"ELECTRIC VENTILATION OF DAIRY STABLES," No. 4 mimeographed, Engineering Extension series, Massachusetts State College, Amherst, Massachusetts.

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